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July 15, 2013

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Room TW-A325
Washington, D.C. 20554

Re: ***Notice of Ex Parte Presentation***

In the Matter of Promoting Interoperability in the 700 MHz Commercial Spectrum, WT Docket No. 12-69

Dear Ms. Dortch:

On July 11, 2013, Scott Wills, Paul Kolodzy, Trey Hanbury, Neal Desai, and I, representing Vulcan Wireless LLC ("Vulcan") met with Sean Lev, David Horowitz, Peter Karanjia, and William Richardson of the Office of General Counsel and Charles Mathias of the Wireless Telecommunications Bureau, and presented the attached slides explaining how restoring interoperability in the Lower 700 MHz band will benefit consumers and discussing the Commission's ample statutory authority to ensure that consumers realize these benefits.

Restoring interoperability will ensure a common platform for the three Lower 700 MHz blocks, facilitating greater service deployment, competition, spectrum efficiency, and innovation in the band. Moreover, the aggressive competition that interoperability will unleash will improve consumer service, reduce consumer switching costs, lower consumer prices, and enhance consumer choice. Interoperability will create a larger and more diverse device ecosystem while increased economies of scale drive down costs for all wireless carriers. Requiring services offered in the Lower 700 MHz band to interoperate does not favor one group of licensees over another, but puts consumers' interests first, including those consumers living in more rural areas. In addition, interoperability will encourage more efficient use of spectrum, helping to ease the dire shortage of spectrum. Congress and the courts have granted the Commission ample authority to restore interoperability in the Lower 700 MHz band.

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Vulcan is the Lower 700 MHz A Block licensee for the Seattle-Tacoma-Bremerton, WA and Portland-Salem, OR-WA Economic Areas. Vulcan acquired these licenses for approximately $113 million in Auction 73 (at more than $1.30 per MHz/pop), the sixth highest amount spent on A Block licenses and the tenth highest amount among all Auction 73 bidders. As a greenfield wireless entrant, Vulcan purchased the spectrum recognizing that the Lower 700 MHz band's superior propagation characteristics would enable efficient and affordable service to consumers residing in and traveling through the urban and rural communities that comprise its markets. Like other auction participants, Vulcan had the reasonable expectation that the Lower 700 MHz band would be fully interoperable. Before the auction, only Band Class 12 had been introduced to the 3rd Generation Partnership Project ("3GPP").[1] At that time, AT&T offered no indication that it might devise another band class that would be largely duplicative with Band Class 12 except to orphan the Lower A Block.[2]

Vulcan has actively participated in efforts by Lower 700 MHz A Block licensees to address equipment availability and Channel 51 interference issues and has engaged vendors, consultants, systems engineers, and service providers to conduct terrain analyses and develop network designs, build-out deployment plans, and cost estimates for wireless service. Moreover, it has entered into long-term lease arrangements with tower facilities and ordered base station infrastructure and user equipment necessary to provide wireless services and meet its initial build-out requirements, despite the presence of two Channel 51 broadcasters in one of its markets.

During the meeting, Vulcan emphasized the substantial public interest benefits that restoring interoperability in the Lower 700 MHz band would bring and the marginal attendant costs. Further, Vulcan explained that AT&T's "CDMA/GSM Fallback" argument is contradicted by marketplace realities and ignores the many A Block licensees—approximately half—who are either GSM or greenfield operators for whom their argument is not applicable. In addition, Vulcan explained the firm legal grounds under which the Commission could adopt an interoperability order.

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[1] *See* 3rd Generation Partnership Project, *Technical Specification Group TSG RAN; UMTS 700 MHz Work Item Technical Report* (Release 8) (2007), *available at* http://www.3gpp.org/ftp/specs/html-INFO/TDocExMtg--RP-38--25062.htm; 3rd Generation Partnership Project, *Presentation of Specification to TSG* (2007), *available at* http://www.3gpp.org/ftp/specs/html-INFO/TDocExMtg--RP-38--25062.htm.

[2] *See* Comments of Vulcan Wireless, LLC, WT Docket. No. 12-69, at 3 (June 1, 2012).

Restoring interoperability generates substantial public interest benefits with no material cost impact for incumbent providers

So long as two incompletely overlapping bands exist in the Lower 700 MHz band, however, American consumers will suffer from increased costs and slower innovation in the wireless service industry. Restoring interoperability will empower consumers by providing a common platform that removes artificial barriers preventing consumers from subscribing to wireless services across multiple networks in the Lower 700 MHz band. It would also spur innovation in technology and enable a wider range of services that are more targeted to meet consumer needs and more competitively priced. Interoperability will also encourage the deployment of broadband networks across the country, expanding reach particularly to rural consumers. This added scale, as well as the unified production of newly compatible devices from different networks will drive increased economies of scale. These cost savings, in addition to benefiting carriers, will be passed on to consumers in the form of lower prices and increased deployment. Interoperability would also substantially reduce switching costs for consumers that rely on service in the Lower 700 MHz band, thereby offering consumers additional choices for service and rates, even by using their existing devices.

Meanwhile, restoring interoperability across the Lower 700 MHz band through the proposed interoperability rule would impose no additional costs of any consequence on licensees, handset manufacturers, or consumers.[3] Although AT&T has suggested that it would incur costs in engineering its handsets to accommodate Band 12 components,[4] in reality the only physical element of handsets that must be changed once interoperability is required would be the replacement of the existing filter component.[5] Following the effective date of an Order in this proceeding, this new filter component would become common to all new devices in the Lower 700 MHz A, B, and C Blocks, and the resultant economies of scale across the larger base of deployed devices would not entail any material cost increases and may, in fact, result in cost

[3] *See, e.g.*, Ex Parte Letter of Grant B. Spellmeyer, Esq., Executive Director—Federal Affairs & Public Policy, U.S. Cellular, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 12-69, at 1 (Mar. 20, 2013) ("Mar. 20, 2013 U.S. Cellular Letter") (noting that if a dual band class solution is implemented, a simple software upgrade will allow AT&T's devices to support both a Band 12 and Band 17 network); Reply Comments of Vulcan Wireless LLC, WT Docket 12-69, at 38-39 (July 16, 2012) (discussing the minimal costs that would be associated with the implementation of a single band-class solution to restoring interoperability).

[4] *See* Letter from Joseph P. Marx, Assistant Vice President, AT&T Services, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 12-69 (Mar. 1, 2013), at 6 ("AT&T March 1, 2013 Letter") ("The mobile devices used by AT&T are not capacious vessels that can easily accommodate additional components.").

[5] *See, e.g.*, Ex Parte Letter of Rebecca Murphy Thompson, General Counsel, Competitive Carriers Association, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 12-69, at 1 (Feb. 26, 2013) ("CCA Feb. 26, 2013 Letter").

reductions.[6] Moreover, consumers that hold Band Class 17 as of the interoperability transition deadline could continue to operate these devices without any adverse impact.[7] No other hardware changes would be required to any components.[8]

Licensees can also elect to implement interoperability in any number of ways.[9] As Vulcan has previously explained, the Commission need not decide which implementation alternative is best. Rather, it need only specify that, by a date certain, all devices capable of operating on any paired spectrum block in the Lower 700 MHz band be capable of operating across all paired spectrum blocks in the Lower 700 MHz band.

Moreover, restoring interoperability to the Lower 700 MHz band also imposes no risk of harmful interference. Proponents of interoperability have submitted extensive data derived from real-world analysis and field testing of Channel 51 broadcasters, high-powered E Block networks and LTE networks, along with device performance measurements.[10] These real-world tests and field measurements stand in stark contrast to the unsubstantiated claims and flawed or incomplete

[6] *See, e.g.*, CCA Feb. 26, 2013 Letter at 3 (noting that Qualcomm has observed that its new interoperable product, the RF360 Front End Solution, "reduces design complexity and development costs, allowing [the original equipment manufacturer] customers to develop new multiband, multimode LTE products faster and more efficiently").

[7] *See* Promoting Interoperability in the 700 MHz Commercial Spectrum, *Notice of Proposed Rulemaking*, 27 FCC Rcd 3521, 3543-44 (2012) ("Further, we would propose to grandfather the use of devices already in use by consumers as of the transition deadline, so that consumers using existing Band Class 17 equipment would not be adversely affected.").

[8] *See* Ex Parte Letter of Michele Farquhar, Counsel to Vulcan Wireless LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 12-69, at Attachment (Nov. 30, 2012).

[9] Licensees might choose to implement interoperability through a "single band class" solution or a "dual band class" solution or through some other mechanism. In a "single band class" solution, carriers using and Class 17 chipsets would incorporate Band Class 12 chipsets into future devices and use multi-frequency band indicator technology in the network software to ensure that all legacy Band Class 17 devices continue to operate as they do today. *See, e.g.*, Ex Parte Letter of Michele C. Farquhar & Christopher J. Termini, Counsel to Vulcan Wireless LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 12-69, at 7 (Jan. 31, 2013) ("Jan. 31, 2013 Vulcan Letter"); Reply Comments of Vulcan Wireless LLC, WT Docket 12-69, at 38-39 (July 16, 2012). In a "dual band class" solution, carriers using Band Class 17 chipsets would incorporate Band Class 12 and 17 chipsets into future devices and would upload basic mapping software into the network to ensure the channel plans of the Band Class 12 devices are properly accounted for. *See, e.g.*, Ex Jan. 31, 2013 Vulcan Letter, at 7; Mar. 20, 2013 U.S. Cellular Letter, at 1. In either case, the interoperability is forward-looking only; previously deployed handsets that are not interoperable are not affected and consumers gain access to interoperable services over time as they purchase new equipment and once the licensees using Band Class 17 update their software to accommodate the expanded frequency map during the routine software-update cycle.

[10] *See, e.g.*¸ Ex Parte Letter from R. Nash Neyland, Cavalier Wireless, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 12-69, at Attachment (May 29, 2012); Ex Parte Letter from Christopher J. Termini, Counsel to Vulcan Wireless LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 12-69, at Attachment (Oct. 10, 2012).

technical submissions of the few parties to this proceeding that have opposed restoring interoperability to the Lower 700 MHz band.[11]

AT&T's "CDMA/GSM fallback" argument is contradicted by marketplace realities

In filings in this docket, AT&T has argued that one obvious benefit of interoperability—the development of a more robust equipment market in which carriers and consumers have greater access to mobile handsets and devices—might not materialize because not all Lower A Block licensees "fallback" to the same 3G GSM air interface that AT&T employs.[12] AT&T thus argues that Lower A Block licensees that use a CDMA air interface would still need to seek out manufacturers to obtain CDMA-equipped devices, and would not benefit from an interoperability requirement that would give them access to AT&T's GSM-based handsets.

This argument is wildly off the mark. First, one-half of the Lower 700 MHz A Block licensees, including Vulcan Wireless, are either GSM or greenfield operators who can benefit fully from AT&T devices.[13] For these operators, the choice of fallback technology is irrelevant even under AT&T's own argument. Second, even those operators who currently fallback to CDMA or some other technology AT&T does not employ do not plan to use the older technology indefinitely.[14] As wireless carriers continue to aggressively deploy LTE networks and more services come to depend on LTE, including voice, the availability of CDMA/GSM fallback becomes increasingly irrelevant.[15] Third, even if CDMA fallback were more widespread technology than it is and longer lived than anyone anticipates, consumers still stand to benefit from greater economies of scale due to the advent and proliferation of multi-technology chipsets. As Vulcan Wireless has previously explained, multi-technology chipsets concurrently support multiple air interfaces in a single device, including LTE, CDMA, and GSM technologies. Thus, if the Commission were to require the restoration of interoperability, a CDMA provider using a multi-technology chipset operating in the Lower 700 MHz band could order a mobile device with the same hardware

[11] *See, e.g.*, Vulcan Notice of Ex Parte Presentations, WT Docket No. 12-69, at 1-3 (Oct. 25, 2012).
[12] *See, e.g.*, Comments of AT&T Services, Inc., WT Docket No. 12-69, at 10-16 (June 1, 2012) ("AT&T Comments"); Reply Comments of AT&T Services Inc., WT Docket No. 12-69, at 10-16 (July 16, 2012); AT&T March 1, 2013 Letter, at 5-6.
[13] *See* Jan. 31, 2013 Vulcan Letter, at 2.
[14] AT&T itself has already begun retiring GSM. *See, e.g.*, "AT&T to Leave 2G Behind," Wall Street Journal (Aug. 3, 2012), *available at* http://online.wsj.com/article/SB10000872396390443687504577567313211264588.html ("An AT&T spokesman said the company no longer sells 2G handsets to contract or prepaid customers . . . AT&T said the transition away from [GSM], will be on market-by-market basis. Service on the networks will be fully discontinued by about Jan. 1, 2017.").
[15] Verizon Wireless, for example, has announced its intention to introduce an "LTE-only phone" in 2014. *See* Sharif Sakr, "Verizon Hoping to Launch Cheaper LTE-Only Phones in Late 2014, Bid Good Riddance to 3G," Endgadget (Mar. 5, 2013), *available at* http://www.engadget.com/2013/03/05/verizon-looks-ahead-to-lte-only-handsets (last accessed July 15, 2013).

specifications used by AT&T's GSM phones that use multi-technology chipsets. The same device would only require a minor software modification to successfully function on either a GSM or a CDMA network. Therefore, both CDMA and GSM carriers would benefit equally from the device cost advantages derived from interoperability.

Without prompt action, however, Lower 700 MHz A Block licensees who currently use Band Class 12 to deploy their networks will fall further and further behind in both the developmental ecosystem for new features and functions, such as Voice-over-LTE, and in the global supply chain for the most advanced handsets and consumer devices. Timely and geographically expansive broadband deployment in the United States will suffer as a result, and so will consumers.

Vulcan has spent considerable effort exploring ways to deploy advanced data services based on the assumption that interoperability is not restored to the Lower 700 MHz band and, alternatively, based on the assumption that interoperability is restored. As a greenfield provider, the lack of interoperability is far more limiting to Vulcan and provides far fewer technology choices and business model options for Vulcan to pursue and deploy. Since the interoperability issue has been in front of the Commission for almost four years, this unresolved issue has harmed Vulcan and has hampered both its pursuit of finalizing partnership discussions and its plans to deploy advanced data services.

Interoperability will benefit consumers

Without an interoperable ecosystem comprising consumer and network software and hardware capable of functioning on other spectrum blocks within the Lower 700 MHz band, A Block licensees will be unable to provide viable wireless broadband service and consumers will continue to face artificial barriers to switching.

If the current fragmentation of the Lower 700 MHz band is allowed to continue, carriers will be forced to select which band classes they allow to roam on their networks, leading to a situation where roaming partners, once selected, are locked in because the phones provided by one carrier might only be compatible on partner networks. If the lock-in effect is allowed to continue, it would harm consumers by reducing choices and artificially blocking their ability to switch from one provider to another. It would also stifle incentives to continue to develop LTE networks by small providers. Interoperability creates a common platform that would facilitate device portability across various wireless operator services offerings and prevent incumbent carriers from skirting the Commission's rules.

In addition, the lack of interoperability hinders the ability of small carriers to negotiate the roaming agreements necessary for nationwide coverage. As a new entrant to the wireless

market, Vulcan realizes that roaming comes with economic risks, as subscribers roaming onto the network of another carrier are reducing revenue for the originating carrier, while there is always the possibility that consumers will decide to shift their allegiance to a roaming partner. However, as the Commission has noted, roaming also facilitates critical benefits such as ensuring that consumers are able to access increasingly important mobile data services such as e-mail and wireless broadband Internet access.[16] Roaming also promotes investment in and deployment of mobile broadband networks, consistent with the recommendations of the National Broadband Plan and the Commission's overarching goal of increasing broadband penetration and adoption.[17]

The Commission has ample legal authority to restore interoperability in the Lower 700 MHz band

During the meeting, the Vulcan representatives also discussed the strong legal foundation from which the Commission could restore interoperability in the Lower 700 MHz band. Specifically, the conversation focused on the Commission's authority under 47 U.S.C. §§ 316 and 303(b).

47 U.S.C. § 316 is an independent grant of authority

Section 316 of Title 47 affirmatively grants the Commission authority to "modif[y]" "[a]ny station license or construction permit" "either for a limited time or for the duration of the term thereof, if in the judgment of the Commission such action will promote the public interest, convenience, and necessity, or the provisions of this chapter."[18] For more than half a century, the courts and the Commission have recognized that this provision provides independent authority to the Commission to take action. The D.C. Circuit expressly held as much in 1953, explaining that section 316 provides the Commission with independent authority "to modify a license without an application for the modification having been made by the licensee."[19] It further explained that to hold otherwise would "nullif[y]" "a large part of the regulatory power of the Commission," that "[t]he public interest and the interests of other operators must be afforded some opportunity for consideration in this field of changing circumstances," and that this ruling was consistent with the statute's legislative history.[20]

[16] *See* Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services, *Second Report and Order*, 26 FCC Rcd 5411, 5411-12 (2011).
[17] *See id.*
[18] 47 U.S.C. § 316(a).
[19] People's Broadcasting Co. v. United States, 209 F.2d 286, 287-88 (D.C. Cir. 1953) (upholding the Commission's use of 47 U.S.C. § 316 to require a broadcaster to shift from Channel 4 to Channel 8).
[20] *Id*. at 288.

Since that time, the D.C. Circuit has repeatedly confirmed the Commission's section 316 authority.[21] For example, in its 2000 decision in *California Metro Mobile Communications, Inc. v. Federal Communications Commission*, the court held that "Section 316 grants the Commission broad power to modify licenses" and that while "licensees have a strong and legitimate interest in administrative repose . . . the Congress gave the Commission the authority in section 316 to override that interest if doing so serves the public interest, convenience, and necessity."[22] Indeed, it is well established that the Commission may use section 316 to "modify entire classes of licenses"—not just a single license.[23] That is because "nothing in the statute . . . suggests that the FCC's modification power is limited to individual licenses."[24]

These court rulings are consistent with the Commission's own interpretation of section 316. The Commission has adopted this understanding of its section 316 authority in prior orders,[25] including repeatedly modifying licenses unilaterally.[26] It also has used this authority both to

[21] *See, e.g.*, Mobile Relay Assocs. v. Fed. Commc'ns Comm'n, 457 F.3d 1, 12 (D.C. Cir. 2006) ("[T]he Commission has the unilateral authority, provided it gives notice to the licensee, to modify a license."); Celtronix Telemetry, Inc. v. Fed. Commc'ns Comm'n, 272 F.3d 585, 589 (D.C. Cir. 2001) ("[I]t is undisputed that the Commission always retained the power to alter the term of existing licenses by rulemaking.").

[22] Cal. Metro Mobile Commc'ns, Inc. v. Fed. Commc'ns Comm'n, 365 F.3d 38, 45 (D.C. Cir. 2004) (upholding the Commission's decision to delete a frequency from the petitioner's license and explicitly rejecting the argument that the Commission's authority to modify licenses is limited only to circumstances occurring after the license grant).

[23] Cmty. Television, Inc. v Fed. Commc'ns Comm'n, 216 F.3d 1133, 1140 (D.C. Cir. 2000) (upholding the Commission's action to modify broadcasters' licenses in conjunction with the transition to digital television).

[24] *Id.*

[25] *See Improving Public Safety Communications in the 800 MHz Band*, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd 14969 (2004) (relying upon the Commission's section 316 authority to divide the 800 MHz band and relocating users). This order explicated the lengthy precedent supporting the Commission's authority under section 316 in detail, and noted that "The D.C. Circuit has held that such modifications do not have to be consensual, that license holders may be moved on a service-wide basis, without license-by-license consideration and that eliminating harmful interference is an accepted basis for ordering license modifications. *Id.* at 15011.

[26] *See, e.g., In the Matter of John H. Gronemeier Licensee of Station WPAX683, et al*., Order of Modification, 28 FCC Rcd 945 (2013) (deleting certain locations from a license because the licensee had not operated a station there for over one year, despite the Commission's inability to contact the licensee after an initial communication); *In the Matter of National Science and Technology Network, Inc.*, Order of Modification and Order, 26 FCC Rcd 2067 (2011) (denying the protest of the National Science and Technology Network and modifying their licenses to delete certain frequencies and alter certain power limits in response to concerns that stations were improperly coordinated, despite significant investments by the National Science and Technology Network); *In the Matter of Ron Gossett and Barbara Gossett and Sprint Nextel*, Order of Modification, 22 FCC Rcd 17481 (2007) (deleting several frequencies from the Gossetts' license after they failed to participate in the rebanding process under the terms of their Frequency Reconfiguration Agreement with Sprint Nextel Corporation); *Service Rules for the 698-746, 747-762 and 777-792 MHz Band, et al*., Second Report and Order, 22 FCC Rcd 15289 (2007) (modifying a station's Guard Band A Block license to operate on different frequencies despite the station's objections). Such involuntary modifications have been explicitly upheld by the D.C. Circuit as valid exercises of Commission authority. *See, e.g.*, Cal. Metro Mobile Commc'ns, Inc., 365 F.3d at 45 (upholding the Commission's decision to delete a frequency from the petitioner's

modify individual licensees and to modify multiple broadcasters' licenses to relocate their transmissions, "[p]ursuant to Section 316 of the Act," in advance of the Lower 700 MHz auctions.[27]

The D.C. Circuit's recent decision in *Cellco Partnerships v. Federal Communications Commission* does not conflict with this long-standing interpretation of section 316.[28] AT&T erroneously cites *Cellco* as support for its view that section 316 authority is "merely supplemental."[29] That flatly misreads the decision. The *Cellco* court noted that the Commission's authority under *another* provision—47 U.S.C. § 303(r)—"supplements the Commission's ability to carry out its mandates via rulemaking even if it confers no independent authority," citing an earlier D.C. Circuit decision, but it said nothing of the sort about 47 U.S.C. § 316. Instead, it identified section 316 as a provision "which enables the Commission to 'alter the term of existing licenses by rulemaking.'"[30]

We acknowledge that the Commission's authority under section 316 is not unbounded. As *Cellco* recently reaffirmed, the Commission lacks the power to make "fundamental changes" to a license simply by citing to section 316.[31] Demonstrating that an alteration to a license constitutes a "fundamental change," however, is a very high bar—as *Cellco* also reaffirmed. To be a fundamental change, the Commission must do something akin to entirely eliminating a tariff requirement, as the Supreme Court held in *MCI Telecommunications v. AT&T*.[32] The elimination of a tariff requirement constituted a fundamental change because rate filings were "the essential characteristic of a rate-regulated industry," and thus "[i]t is highly unlikely that Congress would leave the determination of whether an industry will be entirely, or even substantially, rate-regulated to agency discretion."[33] Though restoring interoperability in the

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license despite the licensee's protests); Mobile Relay Assocs., 457 F.3d at 12 ("the Commission has the unilateral authority, provided it gives notice to the licensee, to modify a license").

[27] *Service Rules for the 698-746, 747-762 and 777-792 MHz Band, et al*., Second Report and Order, 22 FCC Rcd 15289 (2007); *Amendment of Section 73.202(B), Table of Allotments, FM Broadcast Stations (Burkesville, Greensburg, et al.)*, Report and Order, 21 FCC Rcd 11464 (2006); *Amendment of Section 73.202(B), Table of Allotments, FM Broadcast Stations (Cross Plains, Allen, et al.)*, Report and Order, 15 FCC Rcd 5506 (2000).

[28] 700 F.3d 534, 543 (D.C. Cir. 2012).

[29] Ex Parte Letter of David L. Lawson, Counsel for AT&T Services, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 12-69, at 7 (July 8, 2013) ("July 8, 2013 AT&T Letter").

[30] The sentence from *Cellco P'ships*, 700 F.3d at 543 states in full: "Especially when taken together with section 303(r), which supplements the Commission's ability to carry out its mandates via rulemaking even if it confers no independent authority, *see MPAA*, 309 F.3d at 806, and section 316, which enables the Commission to "'alter the term of existing licenses by rulemaking,'" *Celtronix Telemetry*, 272 F.3d at 589, we think it clear that the data roaming rule falls well within the Commission's Title III authority."

[31] *Cellco P'ships*, 700 F.3d at 544.

[32] 512 U.S. 218 (1994).

[33] *Id.* at 231.

Lower 700 MHz band will generate substantial public interest benefits as discussed above, interoperability cannot be said to be an "essential characteristic" of the wireless industry.

In *Cellco*, the court compared the Commission's proposed change to require licensees to offer commercially reasonable roaming agreements to the wholesale tariff-elimination at issue in *MCI* and determined that the data roaming rule "hardly effects such a radical change."[34] Similarly, in *Community Television v. Federal Communications Commission*, the D.C. Circuit compared a license modification relating to the transition to digital television to that in *MCI* and held that the modifications did not constitute a fundamental change. The licensees would essentially "provide the same services, with some flexibility to provide ancillary services" and "under very similar terms."[35]

So too here. Restoring interoperability across the Lower 700 MHz band will not fundamentally change the license of any license holder. Nothing in the licenses or related rules, after all, expressly permits license holders in certain blocks to use a different band class than license holders in other blocks in the Lower 700 MHz band. On the contrary, every other band designated for wireless telecommunications services has featured in-band interoperability, including the Cellular, Personal Communications Services ("PCS"), and Advanced Wireless Services ("AWS") bands. A rule governing interoperability simply returns the Lower 700 MHz band to the status quo ante.[36] And the FCC has discussed the benefits of interoperability as one of its "five key policy goals" in the 600 MHz incentive auction proceeding.[37]

The Commission's authority under Section 316 is also limited to changes that the Commission determines "will promote the public interest, convenience, and necessity, or the provisions of this chapter."[38] An interoperability rule will readily satisfy this standard. As discussed above, there will be many benefits to the public interest. One that is particularly noteworthy in this context is the economies of scale that will become achievable for all Lower 700 MHz band license holders. Services that can rely on systems with access to national or global economies can deliver devices at a lower price point as well as increase innovation, generating public benefit.

Courts have affirmed that the benefits of economies of scale support the Commission's public interest determinations. In *Consumer Electronic Ass'n. v. Federal Communications Commission*,

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[34] *Cellco P'ships,* 700 F.3d at 544.
[35] *Cmty. Television*, 216 F.3d at 1141.
[36] Peter Cramton, 700 MHz DEVICE FLEXIBILITY PROMOTES COMPETITION, at 8 (Aug. 9, 2010) ("Cramton Report") (attached to Ex Parte Letter from Rebecca Murphy Thompson, General Counsel for Rural Cellular Association, to Marlene H. Dortch, Secretary, Federal Communications Commission, RM-11592 (Aug. 10, 2010)).
[37] Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, Notice of Proposed Rulemaking, 27 FCC Rcd 12357, 12401 (2012).
[38] 47 U.S.C. § 316.

for example, the court concluded that "the Commission reasonably determined that a phased-in requirement that all televisions contain a digital tuner would necessarily increase production volumes, and through economies of scale, lower the price of digital tuners for all television purchasers."[39] Similarly, in *Charter Communications Inc. v. Federal Communications Commission*, the court accepted the Commission's rationale that although consumers may face additional costs in the short term from rescinding a rule that precluded cable operators from offering certain set-top converter boxes, "those costs will decrease over time as volume usage increases,"[40] and that the costs of the integration ban "should be counterbalanced to a significant extent by the benefits likely to flow from a more competitive and open supply market."[41] Furthermore, the Commission has recognized the benefits of economies of scale in the form of increased innovation, stating that "to the extent licensees are better able to create large service areas and achieve economies of scale, they are better able to offer new and innovate services."[42]

Even beyond economies of scale, there are significant additional benefits to restoring interoperability in the Lower 700 MHz band and few associated costs. As discussed in detail above, interoperability would benefit both consumers and carriers as well as encourage more efficient use of licensed spectrum.[43] Meanwhile, the attendant costs are nominal, requiring only a one-time software patch update at base stations, whose physical hardware components are already capable of providing interoperability, and a handset filter replacement with no material difference in cost at scale.[44] Finally, extensive field and laboratory testing shows that there are no changes required to Channel 51 and Lower 700 MHz E Block Incumbents, that Band 12 and Band 17 systems have *identical* performance specifications to manage Channel 51 operations, and that Band class 12 already effectively manages high power E Block deployments.[45]

Moreover, beyond the strong empirical evidence demonstrating the high benefits and low costs of interoperability, the Commission would receive great deference in making such a cost-benefit analysis. All parties to the proceeding would acknowledge that such a determination is highly technical, and the D.C. Circuit has noted that it will uphold a "'technical judgment' that is supported 'with even a modicum of reasoned analysis,' 'absent highly persuasive evidence to the

[39] 347 F.3d 291, 301 (D.C. Cir. 2003).
[40] Charter Commc'n Inc. v. Fed. Commc'ns Comm'n, 460 F. 3d 31, 42 (2006).
[41] *Id.* (noting that the benefits include "potential savings to consumers from greater choice among navigation devices, as well as the spurring of technological innovations.").
[42] *Service Rules for the 698-746, 747-762 and 777-792 MHz Band, et al*., Second Report and Order, 22 FCC Rcd 15289 (2007).
[43] *See supra*, pp. 2-3.
[44] *See id.*
[45] *See* Vulcan Notice of *Ex Parte* Presentation, WT Docket No. 12-69, at Attachment (Nov. 30, 2012).

contrary.'"[46] In this case, proponents of interoperability have submitted extensive documentation derived from real-world analysis utilizing field testing of Channel 51 broadcasters, high-powered E Block networks and LTE networks, along with device performance measurements. These tests have overwhelmingly verified that there are no technical impediments to interoperability nor are there any cost impediments. These real-world tests have nullified the subjective and rhetorically unsubstantiated claims submitted by others who claim interference concerns without submitting any relevant field testing or device testing.

In short, the Commission possesses legal authority to restore interoperability through modifying carriers' licenses.[47] Section 316 provides an independent basis of legal authority and restoring interoperability would not rise to the level of an impermissible fundamental change.

47 U.S.C. § 303(b)

The Commission also has independent authority to restore interoperability to the Lower 700 MHz band through 47 U.S.C. § 303(b). This section provides that the Commission may "[p]rescribe the nature of the service to be rendered by each class of licensed stations and each station within any class."[48] Interoperability fits easily within this authority because it prescribes that the services rendered by a Block B or C license holder must operate seamlessly across the Lower 700 MHz band. Interoperability is an important factor in whether a wireless customer can continue to receive wireless services as the customer moves among different operators around the country, rendering interoperability a key aspect of the services being provided.

AT&T attempts to recast the nature of the interoperability mandate to avoid section 303(b)'s scope. It argues that an interoperability rule will amount to the Commission dictating the design of wireless devices and that the rule thus will not "prescribe the nature of the service" in any way. That reading cannot be squared with the reality of how interoperability works or the terms

[46] Mobile Relay Assocs. v. Fed. Commc'ns Comm'n, 457 F.3d 1, 12 (D.C. Cir. 2006) (quoting Hispanic Info. & Telecomm. Network v. Fed. Commc'ns Comm'n, 865 F.2d 1289, 1297-98 (D.C.Cir.1989)).

[47] Nor may other parties successfully argue that the Commission's action to modify licenses is impermissibly retroactive. Restoring interoperability would only govern licensee behavior going forward and thus not have any retroactive effect. The Commission is entitled to enact new policies, even if those changes unsettle licensees' expectations, *See* Chemical Waste Mgmt. v. Envtl. Prot. Agency, 869 F.2d 1526, 1536 (D.C.Cir.1989) ("It is often the case that a business will undertake a certain course of conduct based on the current law, and will then find its expectations frustrated when the law changes. This has never been thought to constitute retroactive lawmaking, and indeed most economic regulation would be unworkable if all laws disrupting prior expectations were deemed suspect."); *see also* DIRECTV, Inc. v. Fed. Commc'ns Comm'n, 110 F.3d 816, 826 (D.C. Cir. 1999) ("A change in policy is not arbitrary or capricious merely because it alters the current state of affairs. The Commission is entitled to reconsider and revise its views as to the public interest and the means needed to protect that interest if it gives a reasoned explanation for the revision.") (quotation omitted).

[48] 47 U.S.C. § 303(b).

of the interoperability rule the Commission proposed. As an initial matter, the Commission's proposed rule directs the interoperability requirement to license holders—not device manufacturers. The effect of the rule is that *license holders* would be required to operate services over the entire band. While the requirement may indirectly impact the design of some devices that license holders offer their customers, most Commission regulations affecting radiofrequency operations have some indirect effects on device design. When the Commission establishes out-of-band-emission ("OOBE"), for example, certain design considerations feasible in the absence of a particular OOBE limits may no longer possible once such a limit is adopted. The Commission's rules do not regulate device manufacturers as a result of these indirect effects any more than an interoperability requirement does. In the case of Lower 700 MHz interoperability, the locus of regulation is firmly on the radiofrequency licensees and the interoperable services they offer.

Moreover, the D.C. Circuit has held that the Commission's section 303(b) authority permits it to "define[] the form . . . service must take for those who seek a license to offer it."[49] At their technical core, Band Class 12 and 17 are different languages that mobile devices can utilize when transmitting. The principal effect of interoperability requirement would be to harmonize these languages. It is therefore unquestionably about the nature of the services being provided.

The narrow reading of "service" that AT&T offers fails to account for the term's statutory definition. Section 153(40) of Title 47 states that "radio communications," which include mobile services,[50] are defined as "the transmission by radio of writing, signs, signals, pictures, and sounds of all kinds, including all instrumentalities, facilities, apparatus, and services . . . incidental to such transmission."[51] As this statutory definition makes plain, device design is considered part of the services rendered. AT&T's attempted dichotomy of services and device design is wholly unavailing.

In addition, AT&T's attempt to read the language affecting device design out of the statutory definition of service contradicts established case law. In *American Library Assoc. v. Federal Communications Commission*, the D.C. Circuit considered the Commission's decision to adopt "broadcast flag" regulations, requiring that digital television receivers manufactured after a certain date include technology allowing them to recognize a digital code, or "broadcast flag," which prevents DTV reception equipment from redistributing broadcast content.[52] Significantly, the broadcast flag affects DTV receiver devices only after the broadcast transmission is

[49] *Cellco P'ships*, 700 F.3d at 543.
[50] 47 U.S.C. § 153(33) ("The term "mobile service" means a radio communication service carried on between mobile stations or receivers and land stations, and by mobile stations communicating among themselves.").
[51] 47 U.S.C. § 153(40).
[52] 406 F.3d 689, 691 (D.C. Cir. 2005).

complete.[53] This timing issue was critical to the D.C. Circuit, which based its decision on the fact that that the "transmission" had been completed before the Commission's rules regarding the broadcast flag became relevant.[54] Specifically, the court noted that the definition of "radio communications" applied "only to 'apparatus' that are 'incidental to . . . transmission."[55] As such, while the definition "plainly encompass the regulation of apparatus," it did so "only while those apparatus are engaged in the process of receiving a . . . broadcast."[56]

In the case of interoperability, the proposed regulation will govern the ability to provide interoperable wireless services by sending or receiving signals in the Lower 700 MHz band. It thus concerns the transmission itself, not the apparatus independent of its use in offering radiofrequency services. This logic is reinforced by the Commission's reasoning when considering the definition of "radio communications" in the context of fixed antenna.[57] Even though fixed antennas may not be in use at any given moment, the Commission reasoned that a fixed antenna must nonetheless be used to complete the communications link. Thus, "when the Commission prescribes the physical attributes of an antenna, such as its installation, maintenance, and use, the purpose and effect of the restriction is to act directly on the transmission and reception of the signals during the course of communication."[58] This argument applies with equal force to interoperability equipment: regulations that affect the physical attributes of radiofrequency equipment are more than just incidental to communication, and therefore are included in the definition of "radio communications."[59]

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[53] *Id.*

[54] *See id*. at 703 ("Because the [devices] are not engaged in 'communication by wire or radio' when they are subject to regulation…the Commission plainly exceeded the scope of its general jurisdictional grant under Title I in this case.").

[55] *Id.* at 703.

[56] *Id*. at 692.

[57] *In the Matter of Continental Airlines*, Memorandum Order and Opinion, 21 FCC Rcd 13201, 13218 (2006).

[58] *Id*. at 13219.

[59] This same reasoning was adopted by the Commission to extend jurisdiction over interconnected VoIP service equipment and during the digital television transition. *See IP-Enabled Services, et al.*, Report and Order, 22 FCC Rcd 11275, 11288 (2007) ("[b]ecause [interconnected VoIP] equipment . . . constitutes an integral and necessary part of any interconnected VoIP service communication, such equipment is properly viewed as 'incidental to such transmission' within the meaning of the statute. . . . [T]hese rules apply to specialized equipment that is used during the course of the transmission or receipt of an interconnected VoIP service communication, not after the completion of a transmission, as was the determining factor for the court in *American Library Association*."); *Second Periodic Review of the Commission's Rules and Policies*, Second Report and Order, 22 FCC Rcd 8776, 8785 (2007) (noting that "[t]elevision receivers are 'apparatus' 'incidental to . . . transmission' of television broadcasts" and distinguishing *American Library Assoc.* because "[t]he requirement we adopt here, by contrast, does not involve post-transmission conduct. Rather, it directly concerns the ability (or inability) of television equipment to receive broadcast transmissions.").

Furthermore, the Commission has adopted interoperability requirements in the past that have had a similar indirect effect on devices or apparatus used in transmission. When considering commercial cellular services for the first time in 1981, the Commission approved two competing cellular systems. In order to "insure full coverage in all markets and compatibility on a nationwide basis," the Commission ordered that "[w]ith respect to mobile stations, all units must be capable of operating at least over the entire 40 MHz of spectrum (i.e., 666 channels).[60] The Commission has thus already demonstrated that it possess sufficient legal authority to mandate interoperability and can do so again now.

Nor can AT&T's narrow interpretation be reconciled with other previous Commission actions.[61] For example, the Commission has used its section 303(b) authority to alter frequency allocations.[62] Implicating only which frequencies were available for use by different parties, these action would not have been a "service" under AT&T's overly narrow definition because no "terms of service" were dictated.

AT&T's excessively restrictive interpretation fails to acknowledge the implications that the service rendered may have on devices.[63] Though interoperability will have some necessary effect on device design, the technical properties of the transmissions are cognizable as part of the nature of the service rendered.[64] Even outside of the section 303(b) context, the Commission has recognized the interplay of device design and service offering. Specifically, from 1996 on, the

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[60] *An Inquiry Into the Use of the Bands 825–845 MHz and 870–890 MHz for Cellular Communications Systems; and Amendment of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems*, Report and Order, 86 FCC 2d 469, 482 (1981).

[61] *See, e.g.*, Amendment of Part 83 of the Commission's Rules with Respect to Use of Frequencies by Ship Stations, 31 FCC 2d 405 (1971) (opening 156.450 MHz, Channel 09, which had previously been reserved for inter-ship communications only between commercial vessels, to all commercial and non-commercial maritime vessels).

[62] *See, e.g., Amendment of Part 2 of the Commission's Rules to Reflect Development of a 'Common System' Microwave Landing System in the Bands 5.0-5.25 GHz and 15.4-15.7 GHz*, Report and Order, 33 FCC 2d 662 (1972) (reserving certain frequencies in the 5 GHz band for the development of the Microwave Scanning Landing Guidance System); *Amendment of Section 9.312, Part 9, Aviation Services, to Make the Frequency 133.20 MC Available to Aircraft Radio Stations for Communications with USAF Radar Advisory Facilities*, 42 FCC 727 (1957) (opening the 133.20 MC frequency to aircraft radio stations for communication with USAF radar advisory facilities).

[63] *See, e.g., Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, Memorandum Opinion and Order and Further Notice of Proposed Rule Making*, 12 FCC Rcd 13942 (1997) (finding that limitations on interconnections between vehicle location and monitoring services ("LMS") and the public switched telephone network that restricted LMS interconnections to "store and forward" transmissions except in emergency situations were "necessary to define the parameters of multilateration LMS service pursuant to the Commission's authority under the Communications Act to prescribe the type of service to be offered.").

[64] *See, e.g., Amendment of Part 74 of the Commission's Rules Regarding FM Booster Stations*, Order, 6 FCC Rcd 6060 (1991) (relying on section 303(b) to alter the Commission's rules in order to mandate certain power limitations and geographic separations for FM booster stations).

Commission has mandated that carriers implement Enhanced 911 ("E911") capabilities.[65] Premised originally on Title III authority, these actions were ratified by acts of Congress, which were subsequently used as additional authorization for new E911 requirements. Allowing carriers to fulfill their E911 obligations either through a network-based or handset-based approach, the Commission went beyond simply mandating the availability of the service. In particular, for carriers pursuing hand-set based deployment, the Commission specifically regulated handset capabilities, including device abilities and penetration rates.[66] These E911 rules were not impermissible regulation of handset manufacturers, as AT&T argues is the case with interoperability, and an interoperability mandate does not go nearly as far, as it would affect device design only indirectly.

In light of the foregoing, section 303(b)'s independent grant of authority clearly applies and provides the Commission firm legal ground to restore interoperability in the Lower 700 MHz band. Interoperability is an intrinsic part of the wireless services carriers' offer to consumers – the characteristics of the mobile device are simply a means to that end. Quite literally constituting the form of the services and operating at the very moment of transmission, court and Commission precedent amply demonstrate that interoperability are part of the nature of the services rendered.

The Commission should restore interoperability in the Lower 700 MHz band

In short, the public would reap significant benefits from restoring interoperability in the Lower 700 MHz band with few attendant costs. The Commission has ample legal authority under 47 U.S.C. § 316 and 303(b) to enact such an order and Vulcan urges the Commission to do so as soon as possible.

[65] *See, e.g., Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 18676 (1996); *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*; Fourth Memorandum Opinion and Order, 15 FCC Rcd 17442 (2000); *Matter of Facilitating the Deployment of Text-to-911 and Other Next Generation 911 Applications*, Report and Order, 2013 WL 2177931 (2013).

[66] *Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*; Fourth Memorandum Opinion and Order, 15 FCC Rcd 17442 (2000).

Consistent with section 1.1206 of the Commission's rules, please associate this letter with the above-referenced docket.

Respectfully submitted

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Attachment

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